

REMARKS

I. Status of the Claims

Upon entry of this amendment, claims 1-69 remain pending, and claims 6-8, 13-16, 37-39, and 44-47 have been withdrawn.

Claims 1, 22, 24, 25, 32, 53, 55, and 56 have been amended.

Support for the amendments to claims 1, 24, 25, 32, 55, and 56 may be found in the published application as follows:

the core material is a single phase liquid at 50°C is supported at paragraph [0098];

the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall is supported at paragraphs [0031] and [0032] and at paragraphs [0044] to [0048]; and

a half-life ranging from about 5 days to about 100 days is supported at paragraph [0014].

The amendments to claims 22 and 56 are supported by paragraph [0078] of the published application.

II. Claim Rejections Under 35 U.S.C. §102(e)

Reconsideration is requested of the rejection of claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 as being anticipated by Asrar et al. (U.S. 6,992,047).

Claim 1 is directed to a pesticidal material comprising a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule

is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

In one respect, claim 1 requires a core material that is a single phase liquid at 50°C. Asrar et al. do not anticipate claim 1 since they do not disclose this claim requirement.

Asrar et al. describe encapsulation of high melting herbicides, such as silthiopham, that are otherwise difficult to encapsulate. To achieve encapsulation, the herbicide is mixed with a melting point depressant material, such as tebuconazole, simeconazole, or fluorophenyltriazoleathenone. As stated in Asrar et al., "Silthiopham has a normal melting point of about 86°C - 88°C, which has limited its incorporation into polyurea microcapsules by known techniques." See Col. 3, lines 49-53. Asrar et al. blend the silthiopham with a melting point depressant and show that melting point depressions of 26°C, 18°C, and 6°C may be achieved. See Col. 8, lines 37-57. Since the normal melting point of silthiopham is about 87°C as stated in Col. 10, line 61, the lowest melting point achieved is about 61°C, which is substantially higher than the temperature at which the claim requires the core material be a single phase liquid. In view thereof, Asrar et al. neither disclose nor achieve a core material that is a single phase liquid at 50°C. Accordingly, Asrar et al. do not anticipate claim 1.

Claim 1 further requires that the pesticidal material have a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C. Applicants describe the method by which they measured the half-life of their composition at paragraphs [0170] to [0176]. In the specified method, a pre-determined mass of microcapsules is added to enough water to act as a perfect sink. The water phase is then sampled at regular intervals to determine the mass of core material released. These data are used to determine the half-life.

Asrar et al. do not anticipate claim 1 since they do not disclose this claim requirement. Asrar et al. do not disclose the half-life determination method described by applicants, so Asrar et al. necessarily do not disclose the claimed half life requirement.

Moreover, Asrar et al.'s teachings do not necessarily yield microcapsules having the claimed half-life (which is necessary for an anticipation rejection based on inherency) since there is no evidence in the reference or otherwise that Asrar et al.'s microcapsules would exhibit the claimed half life if tested by applicants' method, and applicants are not aware of any evidence that the two methods could have been reliably correlated at the time of the instantly claimed invention. The method that Asrar et al. employed to determine release rates differs substantially from that used by the applicants. Asrar et al.'s release rate method is described starting at Col. 31, line 19. In the Asrar et al. method, the microcapsules are placed in water and the vessel is agitated by shaking or stirring prior to sampling. In view of this additional step of agitating their solution, the release rate data of Asrar et al. is not comparable to the

release rate requirements of the pesticidal material of claim 1. That is, since their method of measuring release rate differs in at least one critical aspect, Asrar et al.'s teachings do not describe a method of preparing a pesticidal material that necessarily has the half-life required by claim 1.

Further evidence of the lack of anticipation (inherent or otherwise) may be found in Col. 9, lines 13-30 wherein Asrar et al. state that they seek to prepare microcapsules that may be applied in the fall and retain a sufficient amount of activity "so that it would be releasing at a sufficient level in the spring to provide protection against the increasing biological pressure throughout sprouting and initial growth of the plant." If anything, therefore, Asrar et al. suggest a method of preparing microcapsules that release at a much slower rate and thus has a longer half life than the pesticidal material described by claim 1.

Independently of the half life requirement, Asrar et al. fail to anticipate claim 1 because the reference does not disclose a pesticidal material in which the core material is a single phase liquid at 50°C. In view thereof, applicant's respectfully request withdrawal of the rejection of claim 1.

Claims 2-5, 9-12, 17-23, and 27-31 depend from claim 1 and are patentable for the same reasons as claim 1 and by virtue of the additional requirements therein.

Claim 32 is directed to an agricultural formulation comprising a dispersion of microcapsules having all of the features of the pesticidal material of claim 1. Claim 32 is therefore patentable for the same reasons as claim 1.

Claims 33-36, 40-43, 48-54, and 58-69 depend from claim 32 and are therefore patentable for the same reasons as claim 32 and by virtue of the additional requirements therein.

With respect to claims 22 and 53, they require the absolute value of the arithmetic difference between the respective Hildebrand solubility parameters of the core material and shell be greater than $0.5 \text{ Joule}^{1/2}/\text{cm}^{3/2}$ and less than about $5 \text{ Joule}^{1/2}/\text{cm}^{3/2}$. These claims are additionally patentable over Asrar et al. since Asrar et al. contain no disclosure whatsoever of Hildebrand solubility parameters. Applicants disclose that the structural characteristics of the core material and polyurea shell wall contribute to the respective Hildebrand solubility parameters of the major structural features of the pesticidal material defined by claims 22 and 53. See paragraphs [0075] to [0079] of the published application. Asrar et al. neither disclose these requirements nor would their teachings have caused the ordinarily skilled person to prepare a material inherently meeting the Hildebrand solubility parameter differences required by these claims. A critical difference, for example, is Asrar et al.'s requirement of including a melting point depressant in their core material. The melting point depressant, which is critical to efficacy of Asrar et al.'s method, is a key structural difference which may potentially affect the Hildebrand solubility parameters. This further detracts from any basis for one skilled in the art to conclude that Asrar et al.'s pesticidal material **necessarily** meets all of the limitations of claims 22 and 53.

III. Claim Rejections Under 35 U.S.C. §102(a)

Reconsideration is requested of the rejection of claims 1-5, 9-12, 17-23, 27-36, 40-43, 48-54, and 58-69 as being anticipated by Asrar et al. (WO 2002/082901).

The disclosure of WO 2002/082901 is identical to that of U.S. 6,992,047. In view thereof, claims 1-5, 9-12, 17-23, 27-

36, 40-43, 48-54, and 58-69 are patentable over WO 2002/082901 for all of the reasons stated above in Part II of this amendment.

IV. Claim Rejections Under 35 U.S.C. §103(a)

A. Claims 24, 25, 55, and 56 over Asrar et al. (U.S. 6,992,047)

Reconsideration is requested of the rejection of claims 24, 25, 55, and 56 as being obvious over Asrar et al. (U.S. 6,992,047).

The Asrar et al. patent is cited as a §102(e) reference. As stated by 35 U.S.C. §103(c)(1):

Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the claimed invention was made, owned by the same person or subject to an obligation of assignment to the same person.

The present application, Application Ser. No. 10/728,654, and Patent No. 6,992,047 were, at the time the invention of Application No. 10/728,654 was made, owned by or subject to an obligation of assignment to Monsanto Technology, LLC. In view of the above, Asrar et al. is disqualified as a reference under 35 U.S.C. §103(c)(1), thereby obviating the rejection of claims 24, 25, 55 and 56 as obvious over Asrar et al.

B. Claims 1-5, 9-12, 17-36, 40-43, and 48-69 over Seitz et al. (U.S. 5,925,595)

Reconsideration is request of the rejection of claims 1-5, 9-12, 17-36, 40-43, and 48-69 as being obvious over Seitz et al. (U.S. 5,925,595).

(1) Claims 1-5, 9-12, 17-23, and 26-31

Claim 1 is directed to a pesticidal material comprising a substantially water-immiscible core material, the core material comprising a pesticide and being encapsulated in a shell having a predetermined permeability with respect to the core material, wherein the core material is a single phase liquid at 50°C, the predominant release mechanism of core material from the microcapsule is molecular diffusion of the core material through the shell wall, further wherein the shell of the microcapsule is formed by an interfacial polymerization of a polyisocyanate with other monomers in an encapsulation shell-forming polymerization system, said other monomers comprising a principal amine and an auxiliary amine, and further wherein the microcapsule has a release rate which is characterized by a half-life ranging from about 5 days to about 100 days, the half-life being calculated from a measured release of pesticide over time from a population of microcapsules immersed in water at a temperature of about 30°C.

As endorsed by MPEP §2141, the Supreme Court in *KSR* reaffirmed the familiar framework for determining obviousness as set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966). The first two steps within that framework are (a) determining the scope and contents and the prior art and (b) ascertaining the differences between the prior art and the claimed invention. In this regard, Seitz al. disclose a method of producing a microencapsulated pesticide. The pesticide is encapsulated in a polyurea shell wall prepared from three components: (1) a trifunctional adduct of a linear aliphatic isocyanate, (2) an aliphatic linear diisocyanate, and (3) a polyamine. The rate of release of core material through the

spherical shell wall is stated to be directly proportional to the relative amounts of the trifunctional adduct of a linear aliphatic isocyanate and the aliphatic linear diisocyanate.

Seitz et al.'s disclosure of amines useful for reacting with the trifunctional adduct of a linear aliphatic isocyanate and the aliphatic linear diisocyanate is limited to a single paragraph spanning Col. 8, lines 1-8. They are all stated to be "expected to function adequately." The polyamine is added to the composition in order to react with the isocyanate components to form the desired polyurea. The amine is added to avoid the undesired hydrolysis of the isocyanate.

Seitz et al.'s data as presented in Table 1 spanning columns 9 through 12 compares the Higuchi Release Half Life of various microcapsules prepared using different relative ratios of the N3200 triisocyanate and the TMXDI diisocyanate. Referring first to the data shown in columns 9 and 10, the half lives are 20 hours, 26 hours, 29 days, 45 days, 130 days, and 555 days. When only one isocyanate is used, the half lives are very short -- 20 hours and 26 hours. However, when a 50:50 blend is used, the half life is 130 days. Only two of the samples in Table 1 have half lives within the claimed range, 45 days and 29 days, but it is critical to note that these were achieved by using a blend of isocyanates and a single amine. Turning now to the data shown in columns 11 and 12, none of these samples had a half live within the claimed range. The difference between Examples 1 through 6 and Examples 7 through 11 is the substitution of TETA with DETA (a substitution that decreases the number of amines on the amine component from 4 to 3), and this substitution caused the half lives of the samples of Examples 7 to 11 to increase to years. There is very little predictability that can be discerned from these data. For

example, from Example 7 and 11, increasing the N3200 component from 67% to 90% caused the half life to drop from 1 year to 3 days, while decreasing this component from 67% to 50% increased the half life from 1 year to 16 years. The data indicate dramatic changes in half life from one sample to the next, with very little actual compositional change.

In Comparative Example 12, starting in Col. 16, Seitz et al. compared the release rate of the formulations of Examples 16, 17, and 18 against commercial samples of Topnotch, which is a microencapsulated acetochlor made using aromatic isocyanates. They found that the release rate data of the microcapsules of Examples 16, 17, and 18 correlated with Diffusion Model of release described by Omi et al. Seitz et al. concluded that the half lives "are a function of the TMXDI concentration in the *isocyanate blend*." See Col. 16, lines 43-44. Seitz et al.'s data therefore show a dependence of release rate on the relative ratios of the isocyanates in the blend -- but, the widely varying half lives achieved (from 3 days to 95 years) show that the half life is highly sensitive to composition. Since Seitz offers no comparable disclosure regarding combinations of amine components, the reference would fail to enable those skilled in the art to achieve a defined half life using a combination of amines, even if such combination were otherwise suggested by the reference.

Moreover, Seitz et al. neither disclose nor suggest the use of a blend of a principal amine and an auxiliary amine in preparing encapsulated pesticidal materials. The fact that Seitz et al. devoted a mere 8 lines of their specification to describing adequately functioning amines shows that Seitz et al. did not place any particular importance on the contributions of the amine component to the microcapsule, such as the mechanism

and rates of release. Moreover, Seitz et al.'s disclosure would not have enabled the ordinarily skilled person to predict that a blend of amines could result in an encapsulated pesticidal material in which the half life of release is between 5 days and 100 days, much less to actually provide a material which exhibits a release rate in such range. If anything, Seitz et al.'s data indicates that dramatic changes in half life occur with relatively little compositional change. There are potentially infinite combinations of amines possible in widely varying relative ratios. Seitz et al.'s mere disclosure of some amines, with data showing wide half life variation as a function of isocyanate combinations, would not have led the ordinarily skilled person to predict that any particular combination or ratio would yield microcapsules having a half life within the claimed range.

Despite these differences, the Office has asserted "it would have been prima facie obvious to use both polyamines...in order to form the microencapsulated composition, with a reasonable expectation of success" and "it would be obvious to one skilled in the art to also try varying the other component of the polyurea shell wall (i.e., the polyamine) by using more than one amine in specified ratios in order to improve the permeability of the shell wall." It is respectfully submitted that neither the reference nor the skill in the art provide support for such contention.

Although MPEP §2144.06 states that it is obvious to combine equivalents known for the same purpose. MPEP §2144.06 also states "In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are

functional or mechanical equivalents. *In re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958) (The mere fact that components are claimed as members of a Markush group cannot be relied upon to establish the equivalency of these components...) Herein, the various amines in Seitz et al.'s disclosure are merely listed together, without suggestion of their combination, much less any suggestion of how to combine them for any purpose that would thereby be served. Seitz et al. do not disclose any physical or chemical properties that would have enabled the ordinarily skilled person to predict that microcapsules prepared using a blend of amines would have had a half life within the claimed range. The reasonable expectation of success requires predictability, which is not present in Seitz et al., as described further below.

MPEP §2143 Part E. states that obviousness based on an "Obvious to try" rationale requires:

- (1) a finding that at the time of the invention, there had been a recognized problem or need in the art, which may include a design need or market pressure to solve a problem;
- (2) a finding that there had been a finite number of identified, predictable potential solutions to the recognized need or problem;
- (3) a finding that one of ordinary skill in the art could have pursued the known potential solutions with a reasonable expectation of success; and

As stated in MPEP §2143 Part E.: "If **any of these findings cannot be made**, then this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art." In the present case, obviousness cannot be predicated upon "obvious to try" since the prior art did not recognize a finite number of **predictable** solutions to the problem of preparing controlled release microcapsules nor provide a reasonable expectation that the solutions could be

achieved by employing a blend of a principal amine and an auxiliary amine. That is, prior to applicants' invention, the ordinarily skilled person would not have been able to predict that using a principal amine and an auxiliary amine would have led to microcapsules having a half life within the claimed range. Again, there are infinite amines available, which can be combined in infinite ways in widely varying ratios. The skilled person in the art would not have been able to predict that some combinations would have achieved the claimed half life from Seitz et al.'s mere disclosure of "adequately functioning" amines. The half life itself can vary from extremes of nearly instantaneous release in the case of rupture to nearly infinite, if, for example, the core material is wholly insoluble in the shell wall. The effect of using a blend of a principal amine and an auxiliary amine on either of these requirements is not predictable from Seitz et al.'s disclosure.

Applicants' inventive pesticidal material which comprises a shell wall formed by a polymerization reaction between a polyisocyanate, a principal amine, and an auxiliary amine surrounding a core material is predicated on the discovery of several previously undisclosed factors that may be manipulated by employing a principal amine and an auxiliary amine to affect the mechanism of release and the release rate of the core material through the shell wall. According to the U.S. Supreme Court's decision in *Eibel Process Co. v. Minnesota & Ontario Paper Co.*, 261 U.S. 45 (1923), the discovery of the source of a previously unknown problem and the provision of a novel solution may be unobvious.

The previously undisclosed factors themselves are described in paragraph [0073] and include: "(1) the solubility of the core in the shell wall, (2) the resistance of the polymer to

movement of core material molecules within [the wall] due to the chemical composition of the shell wall, and (3) the interaction between these factors." Prior to applicants' discovery and disclosure, no prior art reference currently of record disclosed the manipulation of the three factors described in paragraph [0073] in preparing the shell wall polymers in order to increase or decrease the molecular diffusivity of core materials through the shell wall; *a fortiori*, no reference disclosed such manipulation through the use of a principal amine and an auxiliary amine.

Based on the art of record, the first factor, the solubility of the core material in the shell wall was not, prior to applicants' discovery and disclosure, predictable merely by examination of proposed shell wall materials, and it was certainly not known how employing a principal amine and an auxiliary amine to prepare the shell wall would affect the overall solubility of the core material in the shell wall. Rather, applicants discovered and disclosed that the solubility of the core material in the shell wall may be determined by, for example, calculating the Hildebrand solubility parameter and correlating that parameter to the relative ratios of a principal amine and an auxiliary amine used to prepare the shell wall polymer, as discussed in applicants' specification at paragraphs [0077] to [0081], and in particular, paragraph [0079].

The cited Seitz et al. patent does not discuss the solubility of the core in the shell wall, disclose how it may be manipulated, or enable the ordinarily skilled person to correlate shell wall solubility with the shell wall components, much less to correlate the solubility to a blend of amines. Seitz et al. is further silent regarding the Hildebrand solubility parameter and its usefulness for manipulating polymer

composition to affect the solubility of core materials in the polymer shell wall.

With regard to the second factor, as stated by applicants at paragraph [0082] of their published application, "that while the core is selected to be soluble in the shell wall, this may not ensure a semi-permeable microcapsule...the second factor above...may have a greater effect on release rates than the ability of the core material to swell the shell wall." As further described by applicants from paragraphs [0082] to [0085] of their published application, polymer shell wall resistance to movement of core material molecules within the wall may be manipulated by the choice of and relative ratios of principal amine and auxiliary amine. For example, applicants describe blending amines comprising alkyl or alkyl ether linkages which provide flexible amorphous segments and amines comprising aromatic or cyclic hydrocarbon rings which provide rigid regions to thereby affect freedom of movement of core material within the shell wall. Seitz et al. do not correlate shell wall resistance to a blend of a principal amine and an auxiliary amine, and therefore would not have enabled the skilled person to predict how the resistance of the shell wall may be affected by using a blend of amines in preparing the polymers thereof.

Overall, therefore, the ordinarily skilled person with the knowledge of the art prior to applicants' disclosure lacked the ability to recognize that release rate is affected by the solubility of core material in the shell wall or predict how solubility of the core material and the resistance of the shell wall to core material mobility therein may be affected through the use of a blend of a principal amine and an auxiliary amine in preparing the shell wall polymers, or how either of these factors, or the combination thereof, would affect release rates.

Applicants, through their discovery, have provided and disclosed methods providing the predictability that was lacking in the art. Based on the principles explained in applicants' specification and the numerous specific examples provided, applicants enabled those skilled in the art to use a wide variety of amines to tailor the encapsulated pesticide to a target release rate anywhere in the claimed 5-100 day half life range.

Applicants discovered that the molecular diffusivity of the shell wall may be manipulated to control the rate of molecular diffusion of core material, to either increase or decrease the rate at which core material diffuses through the wall, through the use of a principal amine and an auxiliary amine. Applicants have further shown how the principal amine and an auxiliary amine affect the solubility of core material in the polymer shell wall and how the principal amine and an auxiliary amine affect the resistance of the polymer shell wall to core material mobility therein. Through their inventive insight, they discovered and disclosed a method for encapsulating a pesticide in a shell wall prepared from a blend of amines in which the half life is within the range of 5 to 100 days.

The disclosure of the Seitz et al. patent is wholly silent regarding core material solubility in the shell wall, shell wall resistance, and, importantly, how these factors are affected by employing a principal amine and an auxiliary amine in preparing the polymer shell wall. Thus, Seitz et al. did not disclose the conditions necessary for and would not have enabled the ordinarily skilled person to predict that using a blend of amines results in microcapsules in which the half lives are between 5 and 100 days.

Applicants respectfully submit that the Office has improperly applied hindsight to read applicants' own discovery into the very limited disclosure of Seitz et al. and thus improperly concluded that the Seitz et al. disclosure provided the ordinarily skilled person with more knowledge than is fairly conveyed by Seitz et al.'s limited disclosure of amines. It is important to note that Seitz et al. disclose specific amines mostly because these are necessary components to react with isocyanates to form polyureas. Seitz et al. would not have enabled the preparation of polyureas at all without disclosing at least a few adequately functioning amine species at the top of Col. 8. Therefore, the ordinarily skilled person would not have read Seitz et al.'s amine disclosure as providing any reason to experiment with the combinations of different amines or their relative ratios to prepare the shell wall. Rather, the ordinarily skilled person would have read Seitz et al.'s amine disclosure as merely a necessary component in the synthesis of polyureas.

In short, Seitz et al. would not have enabled the ordinarily skilled person to predict that employing a blend of amines in various ratios could be used to prepare a pesticidal material having all of the features of claim 1. In view thereof, applicants respectfully submit that the disclosure of Seitz et al. would not have rendered claim 1 obvious, and applicants request that the rejection be withdrawn.

Claims 2-5, 9-12, 17-23, and 26-31 depend from claim 1 and are patentable for the same reasons as claim 1 and by virtue of the additional requirements therein.

(2) Claims 24 and 25

Claims 24 and 25 have been amended to incorporate the requirements of their base claim 1. Therefore, claims 24 and 25 are patentable over the cited Seitz et al. reference for substantially the reasons stated in connection with claim 1. Applicants therefore request that this rejection be withdrawn.

(3) Claims 32-36, 40-43, and 48-54, and 57-69

Claim 32 is directed to an agricultural formulation comprising a dispersion of microcapsules in an aqueous phase having all of the features of claim 1. Claim 32 is patentable over the cited Seitz et al. reference for substantially the reasons stated in connection with claim 1. Applicants therefore request that this rejection be withdrawn.

Claims 33-36, 40-43, and 48-54, and 57-69 depend from claim 32 and are patentable for the same reasons as claim 32 and by virtue of the additional requirements therein.

(4) Claims 55 and 56

Claims 55 and 56 have been amended to incorporate the requirements of their base claim 32. Claims 55 and 56 are patentable over the cited Seitz et al. reference for substantially the reasons stated in connection with claim 32. Applicants therefore request that this rejection be withdrawn.

C. Claims 24, 25, 55, and 56 over Asrar et al. (WO 2002/082901)

Reconsideration is requested of the rejection of claims 24, 25, 55, and 56 as being obvious over Asrar et al. (WO 2002/082901).

WO 2002/082901 published October 24, 2002. The priority provisional document Ser. No. 60/433,409 was filed December 13,

2002. PCT publication WO 2002/082901 therefore may qualify as prior art, if at all, under 35 U.S.C. §102(a). The disclosure of WO 2002/082901 is the same as the disclosure of Asrar et al., U.S. 6,992,047. For example, referring again to the Declarations of each of the four inventors submitted with the Office on August 15, 2008, the inventors have identified the disclosure spanning Col. 24, line 34 to Col. 27, line 65 of U.S. 6,992,047 as describing the work of Michael Seitz, Ronald Brinker, Yiwei Ding, and Jawed Asrar, which is the inventive entity in the present case. This disclosure corresponds to and is identical to the disclosure spanning page 42, line 14 to page 48, line 15 of WO 2002/082901. Within this disclosure, Asrar et al. disclose blending a triamine and a tetramine. Contrary to the Office's assertions, each of the four inventors have provided Declarative evidence that the disclosure of the cited reference, in particular, the use of a blend of amines is the invention of the inventive entity of the pending case. Moreover, any portion of the Examples of WO 2002/082901 describing the materials useful for the interfacial polymerization of an isocyanate with one or more polyamines also describes the work of Michael Seitz, Ronald Brinker, Yiwei Ding, and Jawed Asrar, which is the inventive entity in the present case. In view thereof, anything in WO 2002/082901 that may be relied upon by the Office in rejecting the present claims is not "by others" as required by §102(a), but rather is applicants' own work. Therefore, WO 2002/082901 is not §102(a) prior art. See MPEP §2131.04. The Office has cited claims 1, 19, and 20 as teaching a pesticidal material prepared from a blend of amines. This element is not present in either claim 1 or 19. It is described in dependent claim 20, but the subject matter of dependent claim 20 is derived from the work of the inventive

entity of the present case .as shown in the Declarations and is therefore disqualified as §102(a) art.

The Office has stated that only Jawed Asrar and Yiwei Ding are inventors of the PCT publication, and the inventorship of the U.S. patent has not been corrected. Attendance to the procedural status of the U.S. patent is outside the scope of prosecution of this application. Regardless of the status of U.S. 6,992, 047, the fact remains that the disclosure in WO 2002/082901 relied on by the Examiner in the instant rejection is the work of the inventors in the instant application. Thus, it is respectfully submitted that relevant disclosure is not prior art under §102(a) and the PCT application should be withdrawn as a reference. With withdrawal of reference, the §103(a) must also be withdrawn.

Prosecution of the instant application does not depend on correction of inventorship of the cited reference since §102(a) does not require the authors of the cited reference to be identical to the inventive entity, only that the work described in the cited reference is the work of the inventive entity, which has been established here. See *In re Katz*, 687 F.2d 450, 215 USPQ 14 (CCPA 1982), in which the inventor Katz stated in a declaration that the coauthors of the publication, Chiorazzi and Eshhar, "were students working under the direction and supervision of the inventor, Dr. David H. Katz." The court held that this declaration, in combination with the fact that the publication was a research paper, was enough to establish Katz as the sole inventor and that the work described in the publication was his own. In *Katz*, the inventive entity comprised Katz alone, while the §102(a) was authored by Katz, Chiorazzi, and Eshhar. The reference was disqualified as prior art because Katz was able to show that the work described in the

publication was his own, even though the inventive entity of the patent application and the authors of the publication were not identical.

In the present case, the disclosure of the cited reference pertaining to preparing microcapsules with a blend of amines was the work of the inventive entity comprising the four listed inventors and is therefore disqualified as prior art. Moreover, aside from the procedural status of other cases, the inventive entity herein is the inventive entity of the amine mixture in the claims of other patents. The invention of the cited reference by Asrar and Ding may be summarized with resort to, for example, claim 1, which describes encapsulation of high melting materials, which does not render the claimed subject matter obvious.

Moreover, claims 24, 25, 55, and 56 are directed to a pesticidal material or an agricultural formulation comprising a dispersion of microcapsules in an aqueous phase having all of the features of claim 1. In view thereof, the pesticidal materials defined by these claims require the core material be a single phase liquid at 50°C and the half-life is between 5 and 100 days as measured in 30°C water. Since WO 2002/082901 is identical in disclosure to U.S. 6,992,047, it necessarily follows that these claimed features are not disclosed in WO 2002/082901, nor were they inherent for the reasons stated above. Since these claimed features are not disclosed or even inherent in the pesticidal material disclosed in WO 2002/082901, these features were unknown at the time of the present invention. The specified state of the core material at 50°C is by itself a non-obvious departure from the Asrar PCT. Non-obviousness is compounded by the requirement for a combination of a principal amine and an auxiliary amine which combine with

other components of the claimed pesticidal material to provide the claimed half life of 5 to 100 days in release of pesticide from the core under the conditions defined in the claims. Even if the claimed release rate were shown to be latently inherent in a combination of amines as disclosed by Asrar, there would still be no basis for a finding issue of the obviousness of the pesticidal material defined by claims 24, 25, 55, and 56 would be controlled by *In re Shetty*, 195 USPQ 753, *In re Spormann*, 150 USPQ 49 (CCPA 1966) and *In re Naylor*, 152 USPQ 106, 108 (CCPA 1966). As stated in *In re Spormann*, 150 USPQ 49 (CCPA 1966) "What is unknown cannot be obvious." Simply stated, since these claim features are entirely absent from the disclosure of Asrar et al., the absence of disclosure compels the conclusion that the claimed features cannot be obvious.

In view thereof, claims 24, 25, 55, and 56 are patentable over WO 2002/082901. Applicants respectfully request, therefore, that the rejection be withdrawn.

The Office has asserted that it would have been obvious to encapsulate Asrar et al.'s silthiopham with an acetanilide such as acetochlor or alachlor. The claims are non-obvious over this modification because there is no evidence that the modification results in a pesticidal material in which the core material is a single phase liquid at 50°C.

V. Double Patenting

Applicants acknowledge the provisional double patenting rejection of claims 1-5, 9-12, 17-25, 27-36, 40-43, and 48-69 over co-pending application Ser. No. 11/113,857. Unless and until the co-pending application matures into a patent or the double patenting rejection is the sole remaining rejection in the present case, the appropriateness of the rejection cannot be

ascertained. Applicants therefore request that the double patenting rejection be held in abeyance until one of these conditions is met.

CONCLUSION

In view of the foregoing, applicants respectfully request favorable consideration and allowance of the pending claims.

The Commissioner is hereby authorized to charge the fee for two month extension of time up to and including April 27, 2009 (April 26, 2009 being a Sunday), and any other fees in connection with this response, to Deposit Account No. 19-1345.

Respectfully submitted,

/John K. Roedel, Jr./

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